Sleep And Economic Outcomes Among the Urban Poor In India

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Study Overview:

Research Question:

- Does increasing sleep improve outcomes among low-income workers in Chennai, India?

Participants:

- 452 urban workers
- 28 day randomized controlled trial

How Sleep Was Measured:

- Actigraph wristbands (objective)
- Daily Surveys (participants self report their sleep)

This study examined whether increasing sleep among low-income workers could improve wellbeing and economic outcomes. Participants were given actigraph wristbands that objectively measured sleep accurately and participants also completed daily surveys so researchers cold compare actual sleep with perceived sleep.

Treatment arms (randomly assigned before Day 1)

- Control (~152 participants): No intervention
- Sleep Aid Treatment (~150 participants): Received devices and encouragement to sleep earlier and longer
- Sleep Aid + Incentives (~150 participants): Same devices + financial incentives for increased sleep
- Nap opportunity (cross-randomized, ~50% of all participants): Access to a dedicated nap period during the workday

★ For our graph, we pool the Sleep Aid and Sleep Aid + Incentives arms into a single "Night Sleep Treatment" group, which is how the paper typically presents the main treatment effect.

5.5 Hours

The Baseline

Participants in Chennai averaged 5.5 hours, less night sleep than the expert-recommended 7-9 hours

+27 Minutes

The Intervention

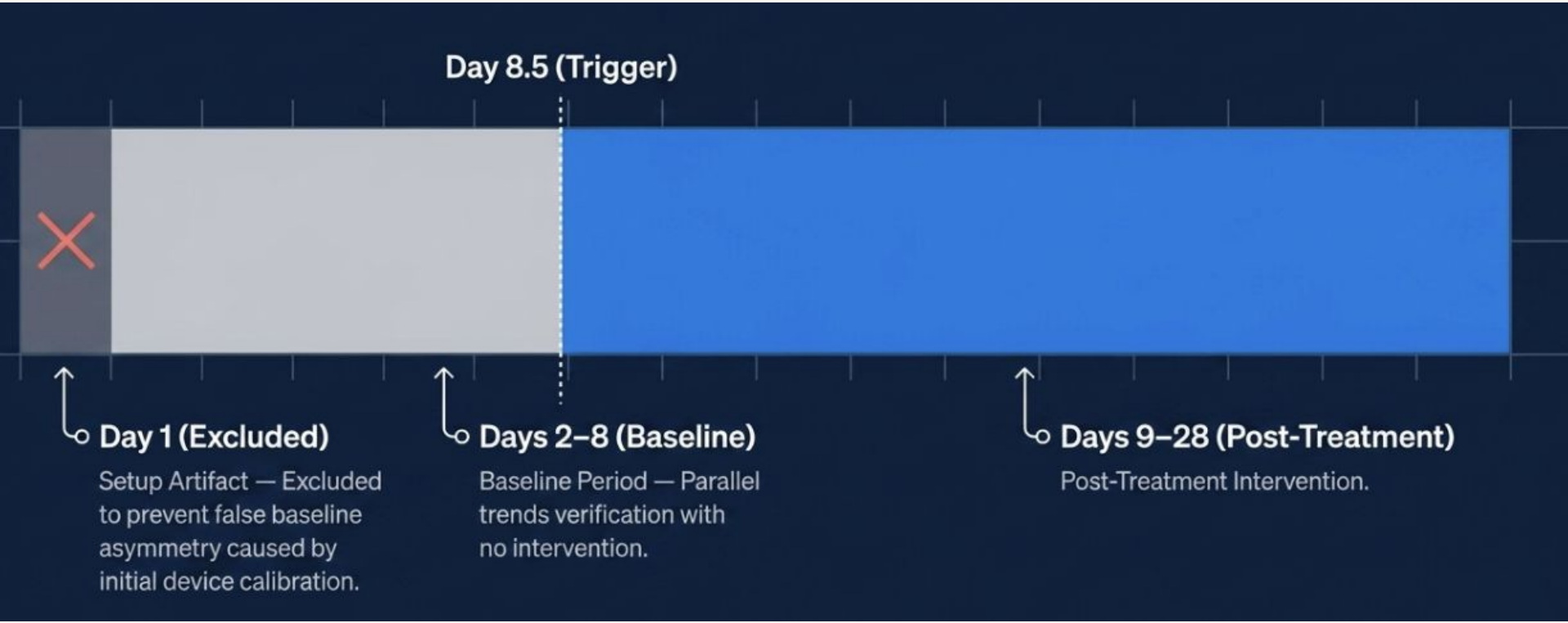
The randomized treatment successfully and significantly increased daily sleep duration

Zero Economic Gain

The Paradox

Despite sleeping more, treated participants showed no meaningful improvements in productivity or earnings. This strongly suggests that sleep quantity alone is insufficient without sleep quality.

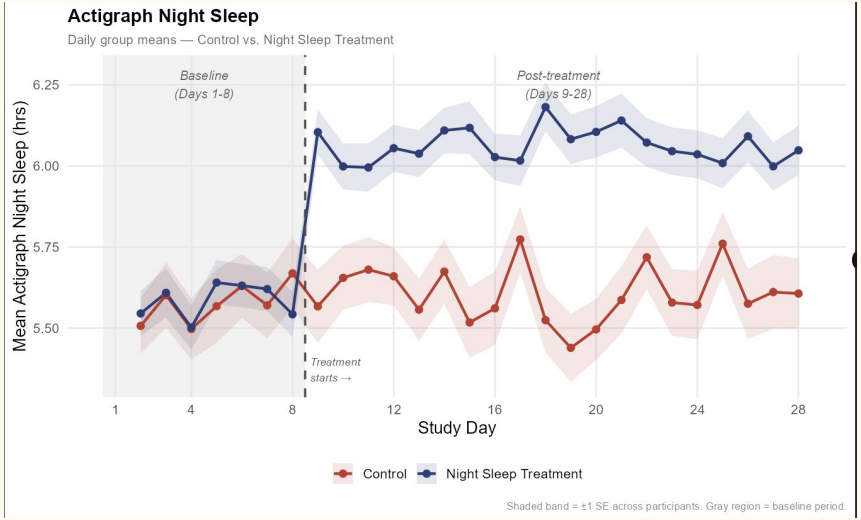
The 28-Day Timeline

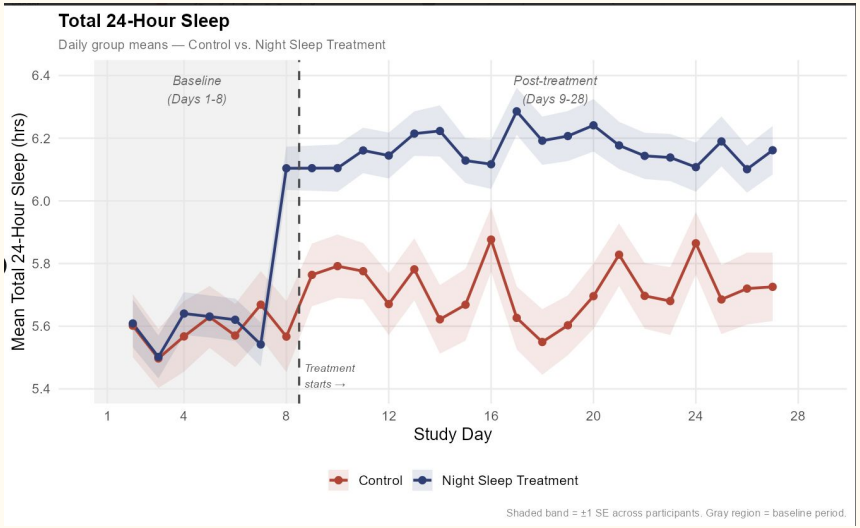


Outcome Tracking:

- Daily Actigraphy data
- Daily self-reported data through surveys given to participants

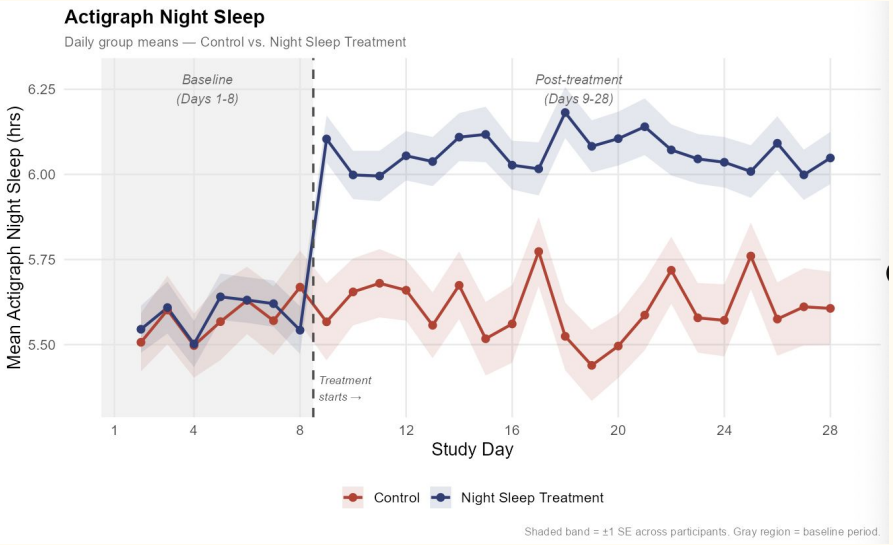
Did Participants Actually Get More Sleep?

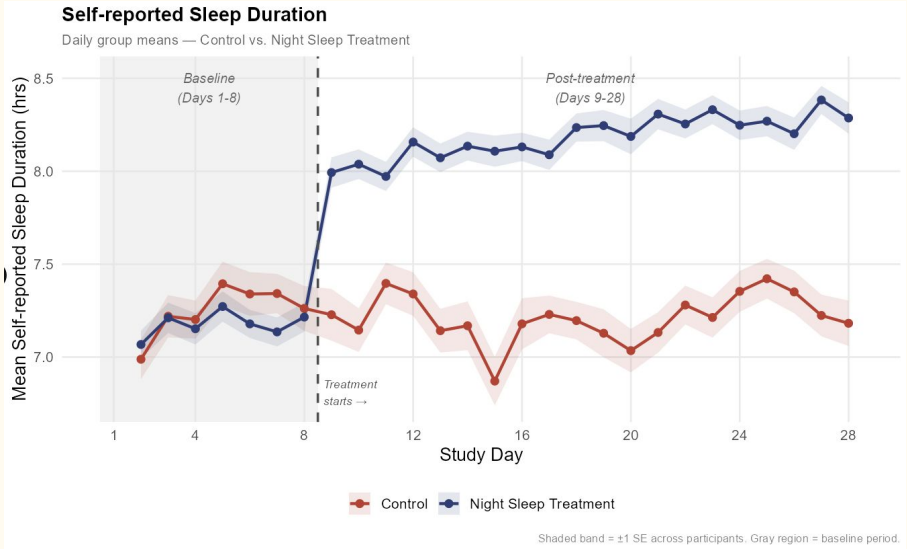




Our Findings:

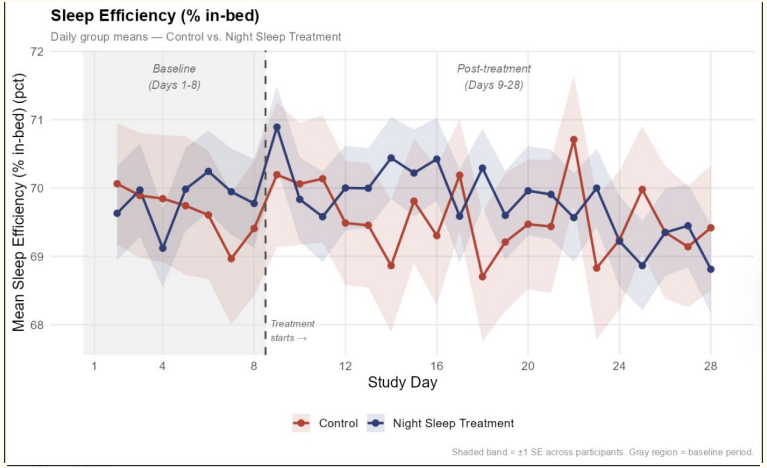
- Similar trends during the baseline period
- Sleep increased after treatment began
- Treatment effects developed gradually over time

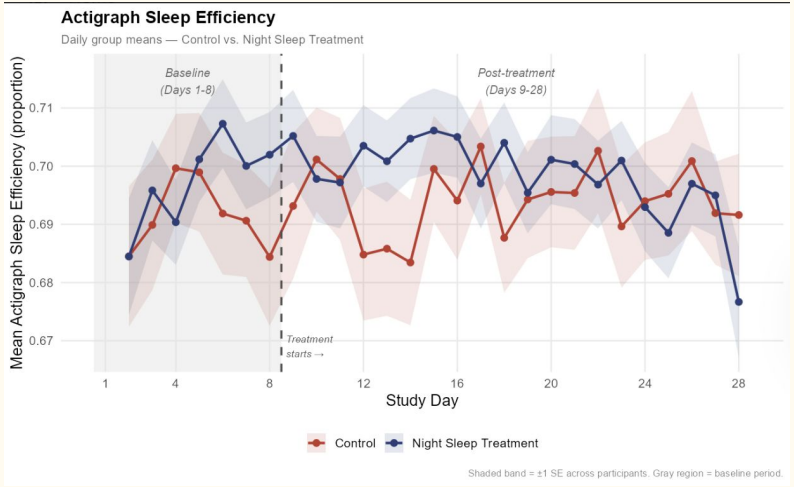


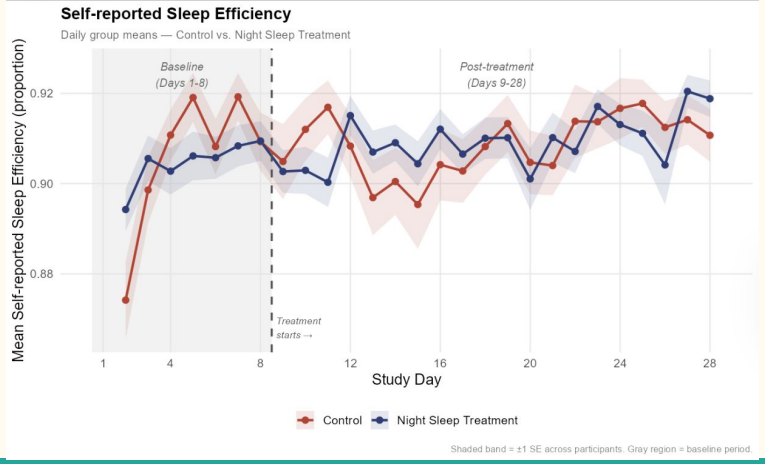


The graph on the right shows how much sleep participants believed they obtained. Comparing it to actigraphy data helps us determine whether participants accurately estimate their sleep duration and comparing these side by side, we can see that the participants who self reported was somewhat close to the actigraph sleep report but there are slight differences, as the self reported sleep data is a bit more stead than the actigraph sleep data which is a bit less steady.

Sleep Efficiency (Quality)







No Divergence: in all three graphs, the navy line (Treatment) and the red line (Control) frequently overlap during the post-treatment period (Days 9-28)

→ **Sleep quality did not improve** even though sleep quantity did

Our Findings/Summary

Overall we find that the intervention was successful in increasing sleep and that participants generally slept longer, spent more time in bed and experienced longer periods of uninterrupted sleep. However we noticed that the improvement in sleep efficiency/quality were pretty moderate and not so exponential. We also found that self reported sleep and objectively measured sleep did not always align which suggests that people may not accurately perceived their own sleep patterns. Altogether, increased sleep alone did not appear to produce singkat improvements in economic outcomes.